AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph on page 11 beginning at line 30 and bridging page 12, ending at line 2, with the following replacement paragraph.

--The precompensated pattern and the desired pattern are subsequently used as training set or training patterns for a neural network. A part of such a network 10 is shown schematically in figure 8 and is represented by the expression

$$a_i = \sum_{j=1}^{9} w_{ij} h_{ij}(x)$$

i.e. the dose a_i is expressed in a set of 9 basic functions h_{ij}, in this case radial functions.

Please replace all three full paragraphs on page 12 beginning at line 4 with the following replacement paragraphs.

--After training of the neural network 10 a precompensated pattern can be determined for another random desired pattern in very rapid manner. A random pattern can for instance be a pattern of 512 by 512 pattern points forming a partial pattern of an integrated circuit. Various partial patterns can then be combined (clustered) to form one pattern which comprises the whole integrated circuit or at least a part thereof.

The above described neural network 10 can be implemented in hardware, and preferably in analog hardware since the calculating speed of neural networks implemented in this manner is very great. The calculating time for precompensation of a pattern thus amounts to less than 60 ns per pattern point. Precompensation of a pattern of an integrated circuit of about 10^{10} pattern points requires in this case only about 10 minutes on present personal computers.

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The invention is further described in the non-prepublished doctoral thesis with the title "Proximity effects correction in electron beam nanolithography", the entire content of which should be deemed as incorporated herein.--

Add new paragraph as follows:

--In order to obtain the desired patterns in both the arrangement of equipment for transmitting electron beams, as well as in the above-described neural network 10, an electronic circuit means 5 can be used. It is this electronic circuit means 5 that implements the presently-invented method for determining a precompensated pattern of exposure doses of an electron beam required per pattern position to obtain a desired pattern in coating a substrate. The electric circuit means 5 is also used in the device for determining the exposure dose of an electron beam required per pattern position to obtain a desired pattern in the coating on a substrate. Specifically, the electrical circuit means 5 effectively implements the neural network 10 to determine the exposure dose. See Fig. 8.--